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# Outcome of Stereotactic Radiosurgery for Patients with Non-Small Cell Lung Cancer Metastatic to The Brain.

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### Abstract

We evaluated the treatment outcome of stereotactic radiosurgery (SRS) alone, allowing for salvage with repeat SRS or fractionated radiotherapy, for managing patients with brain metastases from non-small cell lung cancer (NSCLC). From October 1998 through November 2008, 84 patients with NSCLC metastatic to the brain were treated with linac SRS. The marginal dose of SRS ranged from 12 to 20 Gy. Twenty-one patients underwent salvage radiotherapy and repeat SRS was used for 12. The 1- and 5-year overall survival rates were 38% and 11%, respectively, and the median survival time was 9 months. The 1- and 2-year local control rates were 77% and 52%, respectively, and the median time of local control was 9 months. The most common cause of death was active extracranial disease, and central nervous system (CNS) failure was determined in 16%. Chronic CNS toxicity of grade 4 was observed in 2 patients. Uni- and multivariate analyses revealed that factors significantly affecting overall survival were the presence of active extracranial disease ( $P < 0.0001$  and  $P = 0.003$ , respectively), performance status ( $P = 0.001$  and  $P = 0.009$ , respectively), and number of brain metastases ( $P = 0.0003$  and  $P = 0.019$ , respectively). There were 15 long-term survivors, surviving more than 2 years. A large proportion (87%) had a single brain metastasis initially and few intracranial distant metastases afterwards (20%). SRS alone allowing for salvage radiotherapy was effective for managing brain metastases and avoiding CNS failure from NSCLC. In consideration of appropriate prognostic factors and the so-called oligometastases situation for patient selection, the use of upfront whole brain radiotherapy might improve outcome.

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